

CLIMATOLOGICAL DATA FOR DECEMBER, 1912.

DISTRICT NO. 4, THE LAKE REGION.

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GENERAL SUMMARY.

In the Lake Region the month was mild and pleasant, with abundant sunshine and low humidity for the season. Precipitation was comparatively frequent, but the falls were not heavy at any time, and conditions were in general favorable for outdoor work so far as stress of weather was concerned. Insufficiency of snowfall in Michigan interfered somewhat with logging, but in the extreme western Lake Superior region the amount of snowfall was greater than usual, and, coming as it did after the surface ground had frozen, afforded the best of roads for the operation of this industry. Severe gales were infrequent, although delays to navigation were occasioned on several dates by strong winds. The wind movement was above the December normal in practically all portions of the district. The maximum velocities of the month were reported generally as occurring during the latter part of the first decade.

The following table summarizes the chief features of meteorological interest in the various portions of the district:

Portions of States.	Mean temperature.	Departure.	Mean daily range.	Mean precipitation.	Departure.	Greatest precipitation in 24 hours.	Mean snowfall.	Number of days—			
								With 0.01 inch or more.	Clear.	Partly cloudy.	
Minnesota.....	17.7	+3.0	17.4	1.32	+0.05	1.25	11.9	8	8	9	14 sw.
Wisconsin.....	26.3	+4.8	14.7	1.77	+0.14	1.58	6.0	7	13	6	12 sw.
Illinois.....	33.2	+4.1	14.1	1.02	-0.87	0.56	0.2	6	12	5	14 sw.
Indiana.....	32.6	+5.7	14.6	1.10	-1.23	0.60	0.5	6	11	8	12 sw.
Upper Michigan.....	23.1	+3.5	13.2	2.26	+0.17	1.10	13.7	12	6	5	20 nw.
Lower Michigan.....	30.5	+4.1	12.4	1.41	+0.82	1.87	4.3	9	7	17	sw.
Ohio.....	32.9	+3.3	14.3	1.82	-0.84	0.95	4.9	8	9	7	15 sw.
Pennsylvania.....	34.5	+2.8	11.8	2.59	-0.47	0.71	10.9	13	2	9	20 sw.
New York.....	30.4	+5.9	13.7	2.24	-0.82	2.06	11.2	12	7	9	15 sw.
Vermont.....	28.4	+5.9	16.8	2.10	-0.33	0.98	5.8	9	7	7	17 s.

TEMPERATURE.

Mean temperatures were above normal by from 3° to 6° in all portions of the district, the excess being greatest over the extreme eastern sections and to the south and west of Lake Michigan. As a whole, temperatures of the month showed a remarkably small diurnal range, the degree of oscillation being such as ordinarily occurs during the summer months. Mean daily ranges averaged but 12.4° over the Lower Michigan Peninsula, thence increasing slightly in all directions to the limits of the district, although not exceeding 16° in any portion except in the Minnesota and Vermont sections. The absolute range for the Lake Region was 90° , the highest recorded being 66° , at Keene Valley, N. Y., on the 6th, and the lowest, -24° , at Virginia, Minn., on the 22d.

There was but little cold weather in any portion of the district during December, and no temperatures of

exceptional severity were recorded. The 8th-9th, 11th-13th, 21st-23d marked the only periods during which the readings fell below the seasonal normal over any considerable area. Over the New York and Vermont sections the coldest weather of the month was experienced on the 9th, and to the west of Lake Superior the 22d was the coldest day, but elsewhere most stations recorded the minimum temperature on the 12th, with daily departures of from -15° to -20° .

While the mean temperature of the month has been exceeded in former years, December just passed will be remembered chiefly because of the unusual persistency of warm and pleasant weather, due to the remarkable prevalence of low atmospheric pressure along the northern boundary of the country with high pressures to the southward. As a rule, throughout the district there were 20 days or more that may be characterized either as mild or warm for the season. The highest temperatures were recorded on the 5th-6th generally; yet, considering the gradually decreasing values of the normal through the month, the warmest period really occurred on the last two days, when departures of from $+12^{\circ}$ to $+22^{\circ}$ were general.

PRECIPITATION.

Except near the middle and western Lake Superior region, the precipitation of the month was deficient, the departures, however, averaging less than 1 inch, except over northern Indiana. Only a few stations reported 24 hour falls of more than 1 inch, and usually the greatest amounts in this period were considerably less. Notwithstanding the small totals for the month, precipitation in some amount occurred frequently, although there were many days on which the measurements showed less than 0.01 inch.

Snow.—Over the Minnesota section, and in the colder portions of New York State, the precipitation was nearly all in the form of snow, but in the latter section the depth on the ground was no greater at the end of the month than at the beginning, and at some places it was even less. The snowfall for the month was least over the extreme southwestern sections, where the average was under 1 inch, and it was below the monthly norm generally, except over the western Lake Superior region, where the fall was heavy. At the end of the month from 6 to 15 inches on the ground were reported from the Lake Superior shore; elsewhere, with the exception of the highlands of the eastern portions of the district, there was but little snow on the ground, and in the southern sections the ground was bare.

ICE AND NAVIGATION.

Owing to the high temperatures of the month, less ice occurred in the Great Lakes than usual; the lower lakes and the southern portions of Lakes Michigan and Huron

being comparatively free. In the northern portions of Michigan and Huron ice from 1 to 4 inches thick was reported at the end of the month. In Lake Superior only floating and shore ice was observed at Sault Ste. Marie, and comparatively little over the lake generally. At Duluth by the end of the month the harbor was covered by ice ranging from 7 to 17 inches in thickness.

The display of storm warnings by the Weather Bureau was discontinued for the season on all of the Great Lakes after December 14. General navigation was reported closed as follows: Duluth, 10th; Sault Ste. Marie, 19th; Escanaba, 11th; Alpena, 22d; Detroit, 5th. Local navigation will be maintained as long as possible at Duluth, as well as at the several other ports where it is customary.

DECEMBER LAKE LEVELS.

The following data are from the report of the United States Lake Survey:

	Lake Superior.	Lakes Michigan and Huron.	Lake Erie.	Lake Ontario.
	Fect.	Fect.	Fect.	Fect.
Above tidewater at New York.....	602.11	580.23	571.47	246.11
Above or below:				
Stage of November, 1912.....	-0.27	-0.20	-0.43	+0.03
Stage of November, 1911.....	+0.21	+0.82	+0.05	+1.48
Mean stage of November last 10 years.....	-0.25	+0.07	-0.25	+0.71
Highest recorded stage.....	-1.02	-2.35	-2.06	-1.50
Lowest recorded stage.....	+0.91	+1.23	+0.61	+2.68
Probable change during January.....	-0.50	-0.10	0.00	0.00

SUMMARY OF THE YEAR 1912.

Following the warm December of 1911, January, February, and March, 1912, were in the Lake region marked by such low temperatures as in many localities to break all former records for sustained severe weather, although the absolute minimums did not, as a rule, fall as low as in previous years. The snowfall for this quarter was generally above the average, especially in the southwestern portions of the district, and the ground was for the most part covered throughout this time. Ice in the Lakes was of greater thickness and extent than usual, and the opening of navigation in the spring was in conse-

quence delayed because of the late breaking up of the fields.

Beginning with April the weather moderated rapidly, and it and the following month were marked by mild temperatures. In June, however, several periods of sharp weather occurred, causing frost in portions of the northern and the highland sections of the district. The summer period was one of high humidity, which caused pronounced sultriness in spite of temperatures generally near or below normal. During the last four months of the year warm, pleasant weather prevailed uniformly, but the warmth of this period was insufficient to counterbalance the record-breaking cold of the first quarter, and the year closed with deficiencies ranging from 1.1° to 1.6°.

Precipitation was irregularly distributed, both in point of area and time of occurrence. In general, however, it was greatest in the late spring and the late summer, and markedly deficient at the beginning and at the end of the year. There was also a pronounced lack of rainfall in June, which, coming as it did in the growing season, threatened to become serious, but the drought was relieved by the rains of the early part of July. After this time rain was frequent during the remainder of the crop season; so much so, in fact, as to interfere with harvesting and thrashing to a considerable extent. In April and May spring rains, combined with melting snows in the former month, caused floods in several watersheds of the lower Michigan and Vermont sections, occasioning much damage in localities.

While summer thunderstorms were frequent, and caused in a number of instances loss of life and destruction of property, general storms of the severer type were few. The snowstorm of February 21st-22d was accompanied by high northeast winds, which drifted the snow badly, and resulted in interruptions and delays in traffic of all kinds in practically the entire middle and eastern sections of the district. Two tornadoes were reported—the first at Grand Rapids, Mich., on July 13 and the second near Syracuse, N. Y., on September 15. Detailed descriptions of these storms are given in the respective monthly reports for the Lake region.

The following tables present the monthly values of temperature and precipitation, and the departures from the normals, for the various portions of the district:

MEAN TEMPERATURES. 1912.

Portions of States lying in District No. 4.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
Minnesota.....	-7.3	8.5	18.3	40.3	49.5	58.3	64.4	58.9	55.6	45.8	31.6	17.7	36.8
Wisconsin.....	-0.3	13.5	22.4	44.1	53.9	62.3	68.0	63.4	60.6	49.9	36.4	26.3	41.7
Illinois.....	11.9	21.8	28.8	48.8	59.9	65.4	72.9	71.0	67.0	55.2	42.6	33.2	48.2
Indiana.....	12.9	19.6	27.4	49.9	61.2	66.8	73.1	69.3	66.6	53.7	41.6	32.6	47.9
Upper Michigan.....	-1.1	9.8	17.4	38.3	50.4	58.0	64.7	58.4	57.2	47.5	33.7	23.1	38.1
Lower Michigan.....	9.4	15.8	22.7	44.8	56.6	63.3	69.3	64.7	63.2	51.5	38.6	30.5	44.2
Ohio.....	15.4	20.5	29.3	49.6	57.7	66.0	72.7	68.5	66.8	54.1	41.8	32.9	47.9
Pennsylvania.....	16.4	21.0	28.5	45.5	58.5	63.6	70.4	66.2	66.2	55.5	43.7	34.5	47.5
New York.....	11.6	18.5	24.6	42.0	56.0	60.7	68.7	62.9	60.9	50.8	39.3	30.4	43.7
Vermont.....	8.0	15.0	22.4	41.1	54.8	59.4	67.8	61.5	57.2	49.8	36.9	28.4	41.9

MEAN DEPARTURES FROM NORMAL TEMPERATURES, 1912.

Minnesota.....	-16.6	-2.6	-4.8	+1.0	-0.2	-0.3	-0.7	-4.6	+0.3	+1.4	+4.3	+3.0	-1.6
Wisconsin.....	-17.5	-3.7	-4.1	+1.8	+0.8	-1.0	-0.6	-3.5	+0.6	+1.7	+2.4	+4.8	-1.5
Illinois.....	-11.9	-3.6	-5.6	+2.9	+3.4	-0.3	+0.5	-0.2	+3.1	+2.6	+3.6	+4.1	-0.1
Indiana.....	-13.0	-4.2	-10.7	+1.5	+2.1	-1.7	+0.1	-2.1	+1.7	-0.1	+1.8	+5.7	-1.6
Upper Michigan.....	-15.2	-2.8	-5.0	+0.3	+1.5	-0.6	+0.3	-4.5	+1.3	+2.6	+1.8	+3.5	-1.4
Lower Michigan.....	-12.8	-2.7	-8.1	+0.9	+1.3	-1.8	-0.8	-2.9	+1.5	+1.7	+1.6	+4.1	-1.5
Ohio.....	-11.1	-4.2	-7.8	+1.8	+2.1	-2.3	-0.3	-2.3	+1.8	+1.6	+1.9	+3.3	-1.3
Pennsylvania.....	-10.1	-5.1	-4.6	+0.8	+1.2	-3.4	-1.4	-3.7	+2.3	+2.4	+2.6	+2.8	-1.4
New York.....	-9.2	-3.0	-5.9	-0.7	+1.1	-3.3	-0.1	-3.4	+0.6	+2.3	+3.0	+5.9	-1.1
Vermont.....	-9.0	-3.0	-4.9	-1.1	-0.4	-5.0	-0.5	-3.7	-0.2	+2.9	+2.8	+5.9	-1.4

MEAN PRECIPITATION, 1912.

Portions of States lying in District No. 4.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
Minnesota.....	0.28	0.21	0.26	1.87	5.12	2.14	2.08	3.00	2.71	0.65	0.42	1.32	20.06
Wisconsin.....	0.69	0.82	0.84	1.63	6.03	1.23	6.35	5.23	4.39	2.18	1.41	1.77	32.57
Illinois.....	0.84	1.57	2.20	2.55	3.97	1.65	3.86	3.59	4.18	4.28	1.84	1.02	31.55
Indiana.....	1.19	2.13	2.44	3.02	4.39	2.87	3.88	4.26	3.07	2.74	2.30	1.10	33.37
Upper Michigan.....	1.56	0.44	0.43	2.18	3.49	1.78	2.58	5.00	3.19	2.32	1.63	2.26	26.86
Lower Michigan.....	1.58	1.68	1.28	2.18	5.93	1.29	4.39	3.85	3.49	2.63	2.99	1.41	32.70
Ohio.....	2.26	2.08	3.05	3.72	2.74	2.96	5.64	3.85	3.27	2.87	1.27	1.82	35.53
Pennsylvania.....	3.46	1.21	3.12	4.22	3.29	3.07	3.09	5.90	4.59	5.38	2.17	2.59	42.09
New York.....	2.46	2.23	2.52	3.22	6.09	1.10	2.94	3.75	4.97	2.76	3.47	2.24	37.75
Vermont.....	1.76	1.98	3.02	2.94	6.41	1.90	2.73	3.92	5.29	3.70	3.57	2.10	39.32

MEAN DEPARTURES FROM NORMAL PRECIPITATION, 1912.

Minnesota.....	-0.59	-0.68	-1.15	-0.19	+1.91	-2.17	-1.99	-0.80	-1.36	-2.24	-1.23	+0.08	-10.41
Wisconsin.....	-0.72	-0.50	-1.15	-0.89	+2.71	-2.59	+3.54	+2.66	+1.13	-0.06	-0.53	+0.14	+ 3.74
Illinois.....	-1.16	-0.67	-0.35	-0.33	+0.60	-1.91	+0.22	+0.71	+1.06	+1.85	-0.39	-0.87	- 1.24
Indiana.....	-1.24	-0.28	-0.36	-0.45	+0.17	-0.65	-0.20	+1.34	-0.12	+0.53	-0.28	-1.23	- 2.72
Upper Michigan.....	-0.23	-1.10	-1.52	+0.08	+0.23	-1.23	-0.96	+1.93	+0.11	-0.57	-0.87	+0.17	- 3.96
Lower Michigan.....	-0.65	-0.27	-0.91	-0.15	+2.82	-1.70	+1.32	+1.17	+0.68	+0.05	+0.46	-0.82	+ 2.10
Ohio.....	-0.25	-0.35	+0.10	+0.90	-0.95	-0.63	+1.90	+0.71	+0.31	+0.37	-1.23	-0.84	- 0.16
Pennsylvania.....	+0.43	-1.72	+0.46	+1.82	-0.14	-0.68	-0.12	+2.64	+1.10	+1.55	-1.44	-0.47	+ 3.46
New York.....	-0.36	-0.22	-0.12	+0.57	+1.71	-2.60	-1.19	+0.59	+2.10	-0.53	+0.72	-0.82	- 0.20
Vermont.....	-0.71	-0.38	+0.41	+1.01	+3.29	-1.77	-1.21	-0.46	+2.28	-0.88	+0.47	-0.33	+ 1.72

TABLE 1.—Climatological data for December, 1912. District No. 4, Lake Region.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Prevailing wind direction.	Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.			
Minnesota.																				
Cloquet.....	Carlton.....	800	1	16.5	.....	40	1†	-16	12†	43	2.13	+0.97	0.99	15.4	8	10	6	nw.	W. H. Kenety.	
Duluth.....	St. Louis.....	1,133	41	17.9	+ 0.2	40	1†	-11	22	38	2.19	+0.97	1.25	20.8	12	4	8	sw.	U. S. Weather Bureau.	
Floodwood.....	do.....	1,257	6	15.7	.....	40	1†	-23	22	44	0.86	-0.23	0.25	7.7	8	14	8	w.	M. H. Schüssler.	
Stephens Mine.....	do.....	1,500	5	15.7	.....	40	1†	-23	22	41	0.74	-0.23	0.30	9.0	6	15	8	w.	Oliver Iron Mining Co.	
Two Harbors.....	Lake.....	614	18	22.0	+ 3.2	43	2	-13	22	41	0.74	-0.51	0.30	6.6	7	6	5	w.	G. W. Watts.	
Virginia.....	St. Louis.....	1,434	18	16.6	+ 5.5	39	14	-24	22	38	0.68	-0.51	0.30	6.6	7	6	5	sw.	Oliver Iron Mining Co.	
Wisconsin.																				
Appleton.....	Outagamie.....	795	11	27.2	+ 5.7	48	2†	-3	12	31	0.92	-0.90	0.20	4.0	9	20	2	s.	Wm. O. Thiede.	
Ashland.....	Ashland.....	615	21	20.8 ^a	+ 0.4	44 ^a	14	-14 ^a	22	34 ^a	1.54	+0.33	0.63	18.0	11	8 ^f	5	sw.	Agr. Exper. Station.	
Bayfield.....	Bayfield.....	635	3	21.9 ^c	.....	42 ^c	2	-4 ^c	12	38 ^c	.....	.....	.....	1.5	6	18	7	nw.	F. Kern.	
Cecil.....	Shawano.....	804	14	24.6	+ 3.1	47	6	-8	12	31	2.20	+0.68	0.51	11.0	8	14	10	sw.	Louis W. Schmidt.	
Crandon.....	Forest.....	1,060	17	21.3	+ 4.7	43	14	-11	12	32	.....	.....	.....	12	6	13	13	sw.	Frank Shoemaker.	
Florence.....	Fond du Lac.....	1,293	21	22.5	+ 4.3	47	5	-8	12	33	2.57	+1.03	1.34	7.5	4	11	2	sw.	Fred S. Evans.	
Fond du Lac.....	Fond du Lac.....	800	26	28.2	+ 6.4	49	5†	-2	12	32	1.58	+0.10	0.52	2.5	7	20	3	s.	Jerry Parkinson.	
Grand River Locks.....	Marquette.....	770	16	27.8	.....	48	2	-2	12	31	1.51	+0.17	0.52	2.5	7	10	14	sw.	U. S. Weather Bureau.	
Green Bay.....	Brown.....	617	26	27.5	+ 6.7	52	5	-3	12	37	1.49	-0.32	0.73	4.9	10	5	9	nw.	No. Hydro-Elec. Pow. Co.	
High Falls.....	Marinette.....	1,125	0	23.9	.....	49	2	-8	12	33	1.89	.....	0.70	8.2	10	17	5	s.	Winfield E. Tripp.	
Iron River.....	Bayfield.....	1,096	3	21.4	.....	44	1	-11	22†	40	3.15	.....	1.30	30.0	7	11	6	14	w.	Eugene V. Kimball.
Kewaunee.....	Kewaunee.....	590	3	27.0	.....	50	14	-5	12	29	1.38	.....	0.86	1.0	5	9	8	14	w.	Miss Johanna Lups.
Manitowoc.....	Manitowoc.....	616	61	29.4	+ 4.5	50	2	-1	12	31	1.63	-0.14	0.83	3.2	7	8	9	14	s.	Geo. T. Allanson.
Menasha.....	Winnebago.....	764	15	.....	.....	51	5	0	12	27	2.13	.....	0.88	1.0	7	15	9	7	sw.	Arthur H. Christman.
Memomonee Falls.....	Waukesha.....	842	3	28.4	.....	51	5	0	12	27	2.13	.....	0.88	1.0	7	15	9	7	sw.	U. S. Weather Bureau.
Milwaukee.....	Milwaukee.....	681	42	30.8 ^b	+ 4.8	54	1	-2	12	27	1.34	-0.58	0.95	1.2	6	12	7	12	sw.	August H. Pape.
New London.....	Outagamie.....	762	16	26.0	+ 6.2	49	6	-4	12	38	2.16	+0.68	0.77	6.0	6	13	5	sw.	Wm. K. Smith.	
Oconto.....	Oconto.....	590	21	26.6	+ 4.0	48	6	-4	12	30	2.07	+0.27	0.46	10.0	9	9	14	s.	Evan Vincent.	
Oshkosh.....	Winnebago.....	744	23	26.6	+ 3.7	51	6	-5	12	36	0.73	-0.66	1.45	1.0	4	19	5	7	sw.	Geo. H. Carpenter.
Pine River.....	Waushara.....	900	17	26.4	+ 5.7	50	6	-4	12	37	1.86	+0.46	0.50	5.0	8	9	13	9	sw.	Wm. Robinson.
Plum Island.....	Door.....	588	4	28.9	.....	46	6†	-4	12	26	1.60	.....	0.61	3.0	7	10	6	15	nw.	Paul O. Feldrappe.
Plymouth.....	Sheboygan.....	843	2	23.3	.....	52	6	-2	12	35	1.87	.....	0.82	4.5	7	15	4	12	w.	Richard C. Kann.
Port Washington.....	Zaukee.....	713	19	30.0	+ 6.3	53	2	0	12	28	2.14	+0.38	0.80	3.5	5	13	4	14	nw.	Daniel Davis.
Racine.....	Racine.....	633	15	31.4	+ 6.0	54	2	-2	12	28	2.07	-0.40	0.40	1.0	5	18	6	7	sw.	Ripon College.
Ripon.....	Fond du Lac.....	1,031	2	27.3 ^a	.....	51 ^a	6	-3	12	35	1.41	.....	0.53	2.5	7	12 ^a	8 ^a	10 ^a	s.	Louis C. Meyer.
Sheboygan.....	Sheboygan.....	831	13	29.6	+ 4.0	55	2	-2	12	28	2.98	+1.21	1.58	2.0	5	12	9	10	nw.	Adam N. Dier.
Sturgeon Bay.....	Door.....	600	13	27.7	+ 3.3	47	6	-1	12	29	2.66	.....	0.74	4.0	7	11	7	13	sw.	Edward B. Banks.
Superior.....	Douglas.....	701	3	28.6	.....	42	1	-8	12	33	1.25	.....	0.57	8.8	12	9	10	12	sw.	James H. Flagg.
Waupaca.....	Waupaca.....	857	17	25.4 ^j	+ 5.9	50 ^j	14	-5	12	36	1.83	+0.55	0.81	12.5	8	17	6	8	sw.	
Illinois.																				
Chicago.....	Cook.....	823	42	33.4	+ 4.1	57	5	3	12	26	1.03	-0.99	0.45	T.	9	11	7	13	sw.	U. S. Weather Bureau.
Evanston.....	do.....	801	....	33.0	.....	55	2	1	12	32	0.89	-0.95	0.43	T.	6	14	2	15	....	City of Evanston.
Indiana.																				
Auburn.....	Dekalb.....	874	16	30.6 ^c	+ 4.6	61 ^c	5	-2 ^c	23	38 ^c	0.78	-1.35	0.36	3	10 ^b	5 ^b	14 ^b	sw.	Mrs. Josie B. Kuhlman.	
Berne.....	Adams.....	849	3	33.2	.....	60	5	5	12	33	1.37	.....	0.57	2.0	9	10	10	11	sw.	Henry M. Reusser.
Elkhart.....	Elkhart.....	801	10	.....	.....	50	5	5	12	32	1.07	-1.38	0.46	0.2	11	6	10	15	sw.	Dr. Miles Medical Co.
Fort Wayne.....	Allen.....	856	16	33.0	+ 5.7	60	5	5	12	32	1.25	-0.95	0.44	T.	5	12	7	12	....	U. S. Weather Bureau.
Hammond.....	Lake.....	598	21	33.7	+ 6.8	58 ^c	1	2	11	35	1.25	-0.95	0.44	0	4	21	11	10	....	Carson W. Whitney.
Howe.....	Lagrange.....	886	7	32.8	.....	60	5	7	12	35	1.55	.....	0.60	0	4	21	11	10	....	James E. Zook.
Notre Dame.....	St. Joseph.....	712	1	32.2	.....	59	5	5	12	31	0.62	.....	0.29	0.7	5	5	15	11	sw.	U. S. Weather Bureau.
Whiting.....	Lake.....	606	3	32.4	.....	55	5†	3	12	25	1.05	.....	0.39	T.	7	13	8	10	sw.	D. H. Boyd.
Michigan.—Upper Peninsula.																				
Baraga.....	Baraga.....	623	10	.....	.....	42	14	-14	12	40	2.25	.....	0.36	13.6	11	10	0	21	w.	D. S. S. & A. Ry.
Bergland.....	Ontonagon.....	1,300	2	19.6	.....	42	14	-14	12	40	1.80	-0.23	0.30	1.36	11	4	1	26	sw.	Frank McMonigal.
Calumet.....	Houghton.....	1,246	24	21.6	+ 0.4	40	1	1	12	27	4.74	+1.82	0.64	46.0	19	3	3	25	w.	E. S. Grierson.
Chatham.....	Alger.....	875	11	20.8	+ 1.4	40	1†	-6	12	36	0.86	-0.20	0.22	7.7	7	4	3	24	n.	Upper Peninsula Exp. Sta.
Deer Park.....	Luce.....	610	11	25.0 ^b	+ 3.4	42 ^b	1†	4 ^b	11†	21*	1.28	-1.48	0.30	6	6 ^a	3 ^a	21	24	....	Mrs. Sarah E. McGav.
Detour.....	Chippewa.....	585	11	24.6 ^e	+ 1.2	44 ^e	1	4 ^e	12	27	1.36	-0.23	0.30	13.6	11	10	0	21	w.	Wm. Jones, Jr.
Eagle Harbor.....	Keweenaw.....	622	13	24.6 ^e	+ 1.2	44 ^e	1	4 ^e	12	27	1.36	-0.23	0.30	13.6	11	10	0	21	w.	John Nolen.
Escanaba.....	Delta.....	612	39	25.0	+ 3.4	44	5	-4	12	29	1.80	+0.10	0.75	7.1	8	6	7	18	sw.	U. S. Weather Bureau.
Ewen.....	Ontonagon.....	1,147	11	20.4	+ 4.5	44	14	-8	8	37	3.34	+1.30	0.62	22.5	15	11	2	25	....	W. B. Hatfield.
Grand Marais.....	Alger.....	610	11	25.4	+ 2.5	40	5	4	21	29	2.44	-0.6	0.80	14.4	12	4	2	25	....	Mrs. Lena Trundell.
Green.....	Ontonagon.....	622	1	.....	.....	43	1	1	22	29	2.92	+0.45	1.00	21.1	19	3	3	25	....	T. A. Green.
Houghton.....	Houghton.....	668	11	22.6	+ 1.1	43	1	1	22	29	2.92	+0.45	1.00	21.1	19	3	3	25	....	U. S. Weather Bureau.
Humboldt.....	Marquette.....	1,536	15	24.1	+ 6.3	41	2†	-9	23	39	2.54	+1.32	1.00	5.4	6	0	25	w.	D. S. S. & A. Ry.	
Iron Mountain.....	Dickinson.....	1,111	11	24.1	+ 4.6	47	24	-7	12	38										

TABLE 1.—Climatological data for December, 1912. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Prevailing wind direction.	Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmetted.	Number of rainy days, 0.01 inch or more.	Number of partly cloudy days.	Number of cloudy days.			
<i>Michigan.—Lower Peninsula—Con.</i>																				
Battle Creek.	Calhoun.	822	28	31.3	+3.7	57	6	8	13	30	0.88	-1.58	0.42	3.0	6	12	3	16	sw.	Elmer E. Sager.
Bay City.	Bay.	593	16									-0.74	0.70	7.4	13	8	5	18	sw.	Pere Marquette R. R.
Benzonia.	Benzie.	832	15	30.3	+3.7	54	5	8	12	30	2.67	-0.94	0.26	3.0	13	2	13	16	sw.	Wallace Nutting.
Berlin.	St. Clair.	23	29.6	+3.1	53	2 ^d	6	8	12	27	1.34	-0.94	0.26	10	2	11	18	sw.	R. O. Gould.	
Big Rapids.	Mecosta.	906	16	30.0	+6.2	54	2	6	12	27	2.36	+0.04	1.56	.....	10	2	11	18	sw.	Supt. Waterworks.
Blissfield.	Lenawee.	687	9	32.2		58	6	8	13	31	0.63		0.38	2	17	3	11	w.	Harry Watson.	
Bloomington.	Van Buren.	8	31.2			58	4	9	12	35	1.90		0.80	4.5	5	9	3	19	sw.	John M. Haven.
Cadillac.	Wexford.	1,293	3	28.0		51	6	5	12	30	2.26		1.16	10.0	10	5	2	24	sw.	Cadillac W. & L. Co.
Cassopolis.	Cass.	903	11																	Michigan Central R. R.
Charlevoix.	Charlevoix.	610	34	29.0	+0.7	50	1	5	8	27	1.64	-0.69	0.34	7.0	5	3	3	25	nw.	Pere Marquette R. R.
Charlotte.	Eaton.	8	30.8			59	6	8	12	33	0.38		0.20	2.0	3	2	16	sw.	City of Charlotte.	
Cheboygan.	Cheboygan.	611	22	26.3	+2.4	48	2	4	8	26	0.65	-1.25	0.30	8.0	3	7	19	5	w.	E. A. Bouchard.
Clinton.	Lenawee.	830	22	32.0	+4.2	55	1 ^d	7	13	30	0.57	-1.56	0.24	T.	6	8	14	9	sw.	David Woodward.
Coldwater.	Branch.	984	15	31.8	+5.1	55	8	12	30	1.05	-1.29	0.22	3.6	9	8	1	22	sw.	L. S. & M. S. R. R.	
Concord.	Jackson.	7	31.0 ^d			59 ^d	6	8 ^d	12	33				9 ^c	17 ^c	2 ^c	2 ^c	sw.	W. N. Armstrong.	
Croton.	Newaygo.	685	4	30.8		53	2	9	12	30	1.59		1.02	2.0	8	5	11	15	sw.	Gr. Rap. Musk. Power Co.
Detroit.	Wayne.	730	41	32.0	+2.5	58	6	11	12	30	1.26	-1.13	0.35	3.6	15	2	9	20	w.	U. S. Weather Bureau.
Durand.	Shiawassee.	799	4																	H. J. Tobin.
East Tawas.	Iosco.	590	15	28.6	+3.9	46	2	0	9	32	2.35	+0.86	1.65	.....	6	7	10	14	w.	Detroit & Mackinaw Ry.
Eloise.	Wayne.	640	15	32.5	+6.1	58	6	10	12	27	0.84	-1.53	0.22	1.1	10	6	12	w.	John Gilmore.	
Flint.	Genesee.	730	23	31.5	+4.9	57	6	9	12	27	0.63	-1.16	0.25	1.0	8	5	7	19	w.	William L. Fisher.
Frankfort.	Benzie.	589	8	32.4		48	2 ^d	12	21	1.71		0.45	6.0	7	0	24	w.	Geo. Morency.		
Ganges.	Allegan.	665	3	32.8		56	6	11	12	26	1.70		0.38	3.0	8	11	3	17	sw.	H. H. Hutchins.
Gaylor.	Otsego.	1,367	12	26.0	+4.1	50	6	3	23	32	1.50	-0.58	0.40	12	4	0	27	sw.	Michigan Central R. R.	
Gladwin.	Gladwin.	794	16			52 ^b	2	5 ^b	12	27				10 ^b	2	10 ^b				Geo. R. Smith.
Grand Haven.	Ottawa.	628	31	33.6	+3.5	55	1	11	12	24	1.75	-0.76	0.82	3.8	16	4	7	20	w.	U. S. Weather Bureau.
Grand Rapids.	Kent.	707	23	32.8	+4.0	56	6	10	12	28	1.32	-1.22	0.66	2.3	11	3	7	21	s.	Do.
Grape.	Monroe.	625	22	31.5	+2.9	58	6	8	12	31	1.01	-1.02	0.50	2.8	13	5	10	16	sw.	Joseph W. Morris.
Grass Lake.	Jackson.	989	6	30.1		52	5 ^b	8	12	27	0.98		0.30	4.0	6	14	10	7	sw.	Menzo Conklin.
Grayling.	Crawford.	1,147	22	26.8	+3.9	50	2	5	12	27	1.84	-0.50	0.76	6.6	13	6	2	23	w.	S. N. Insley.
Greenville.	Monteal.	802	0	30.2 ^b		55 ^b	5	6 ^b	12	26 ^b	2.47		0.95	7						Michigan Pickle Co.
Harbor Beach.	Huron.	635	24	31.2	+4.0	55	2	10	12	37				6	11	14				Pere Marquette R. R.
Harrison.	Clare.	1,159	19	28.9	+5.5	52	1 ^d	3	12	30	2.32	+0.44	1.87	2.0	3	5	3	23	w.	Do.
Harrisville.	Alcona.	616	28	28.4	+3.9	52	6	4	12	34	2.37	-0.16	0.97	9.0	12	4	7	20	sw.	D. W. Mitchell.
Hart.	Oceana.	688	20																	Pere Marquette R. R.
Hayes.	Huron.	620	22	29.2	+2.0	59	6	7	12	30	1.38	-0.27	0.70	1.2	5	6	5	20	sw.	C. F. Leipprandt.
Highland.	Oakland.	1,006	20																	A. D. DeGarmo.
Hillsdale.	Hillsdale.	1,150	15	30.6	+5.3	56	5 ^b	8	12	31	1.52	-1.60	0.61	3.2	8	11	2	18	sw.	C. L. Herron.
Holland.	Ottawa.	610	6	32.6		55	6	11	12	25	1.46		0.40	4.0	18	6	10	15	sw.	City of Holland.
Houghton Lake.	Livingston.	924	20	30.5	+3.9	56	5 ^b	8	12	28	0.78	-0.95	0.23	0.8	10	6	11	14	sw.	James H. Ostrander.
Howell.	Kalkaska.	23	29.5 ^b	+5.6	53 ^b	5			12	31 ^b			0.30							Frank Sharp.
Ivan.	Jackson.	927	15	31.4	+4.9	58	6	8	13	32	0.64	-1.29	0.15	1.7	9	12	9	10	sw.	O. L. Giddings.
Jeddo.	St. Clair.	667	23	30.0	+3.2	54	2	8	12	25	0.85	-1.37	0.35	2.1	9	4	12	15	sw.	City of Jackson.
Kalamazoo.	Kalamazoo.	955	36	30.8	+3.0	56	5 ^b	8	12	31	2.03	-0.80	0.55	5.0	8	11	5	15	w.	William Bice.
Lansing (Agr. College).	Ingham.	863	48	31.0	+4.2	57	5	9	12	27	1.20	-0.88	0.36	2.1	6	7	7	17	sw.	Kalamazoo Asylum.
Lansing (Capitol).	do.	881	25	30.8	+3.1	57	6	9	12	28	1.44	-0.58	0.42	1.8	14	7	4	20	sw.	U. S. Weather Bureau.
Leper.	Lapeer.	827	13																	State Board of Health.
Ludington.	Mason.	556	14	32.1	+5.2	53	1	8	12	26	1.54	-0.44	0.97	3.8	12	2	7	22	w.	Michigan Home.
Luther.	Lake.	1,028	2	28.8		52	2 ^d	5	12	34	2.26		1.28	11.5	16	4	7	20	sw.	Pere Marquette R. R.
Mackinaw.	Cheboygan.	592	21	27.8	-3.9	52	6	5	12	35				6.5						Do.
Mancelona.	Antrim.	1,121	16						10 ^b	31 ^b										Pere Marquette R. R.
Manistee.	Manistee.	600	15	32.4	+4.8	57	6	5	12	32	1.85	-0.54	1.00	0.5	3	6	1	24	sw.	E. B. Stuart.
Marshall.	Calhoun.	896	0	31.3 ^b		62 ^b	5	12	12	27	2.71									Pere Marquette R. R.
Midland.	Midland.	604	13	30.5	+4.3	50	6	8	12	31	1.51	-0.44	0.60	4.3	13	4	8	19	sw.	George J. Tripp.
Morenci.	Lenawee.	811	5	32.6		58	6	7	12	29	1.29		0.45	1.6	11	9	3	19	sw.	Waterworks.
Mount Clemens.	Macomb.	615	12																	Pere Marquette R. R.
Mount Pleasant.	Isabella.	826	13	30.6	+5.3	55	6	6	12	38	0.65	-0.89	0.60	6.5	2	7	14	10	w.	G. R. & I. Ry.
Muskegon.	Muskegon.	587	16	33.0	+5.3	54	1	11	12	26	3.51	+1.45	1.25	2.2	14	8	13	10	sw.	Pere Marquette R. R.
Old Mission.	Grand Traverse.	858	18	29.5	+2.9	53	2	6	12	31	1.51	-1.40	1.01	1.3	3	18	9	4	sw.	E. O. Ladd.
Olivet.	Eaton.	934	20	30.8	+3.9	57	5 ^b	8	12	29	0.98	-1.52	0.40	1.6	10	1	20	20	w.	G. A. Knapp.
Omer.	Arenac.	616	13																	Detroit & Mackinaw Ry.
Onaway.	Presque Isle.	826	9	27.4		60	2	5	12	33	0.60		0.20	6.0	3	4	7	20	w.	Do.
Owosso.	Shiawassee.	731	15	30.8	+4.5	58	2	9	12	29	1.21	-0.43	0.43	1.1	11	2	19	10	sw.	Owosso Sugar Co.
Petroskey.	Emmet.	660	22	30.0	+4.2	58	6	8	12	33	1.03	-0.89	0.50	1.5	8	3	2	26	sw.	G. R. & I. Ry.
Plymouth.	Wayne.	725	15	32.1	+4.6	57	6	10	12	37	2.03	-1.40	1.01	1.3	3	18	9	4	sw.	Pere Marquette R. R.
Pontiac.	Oakland.	935	12	29.8	+1.1	56	6	8	12	28	0.72	-1.84	0.24	6.0	5	12	15	sw.	Fred W. Shaw.	
Port Austin.	Huron.	618	15	30.4	+3.5	55	6	10	12	27	1.15	0.0	0.57	1.5	7	11	9	11	s.	Pere Marquette R. R.
Port Huron.	St. Clair.	639	37	30.8	+3.5	55	6	10	12	26	1.29	-0.88	0.29							

TABLE 1.—Climatological data for December, 1912. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.					Number of rainy days. 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Prevailing wind direc- tion.	Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unadjusted.								
Ohio—Continued.																						
Findlay.....	Hancock.....	776	23	32.2	+ 1.5	60	5	5	23	32	1.11	- 1.41	0.57	2.0	4	17	12	2	sw.	Dr. E. A. Moser.		
Fremont.....	Sandusky.....	628	10	34.0	+ 4.8	62	5	5	12	29	1.80	- 0.95	0.60	3.7	6	12	6	13	sw.	E. Stanley Thomas.		
Hedges.....	Paulding.....	725	18	31.6	+ 3.1	60	5	5	12	37	2.19	- 0.71	0.55	4.2	10	9	4	18	w.	Charles Sutzman.		
Hillhouse.....	Lake.....	997	19	32.5	+ 3.6	60	5	8	13	28	2.62	- 0.53	0.71	13.0	6	6	7	12	s.	J. W. Doncaster.		
Hiram.....	Portage.....	1,260	32	31.6	+ 2.4	59	5	8	13	29	1.73	- 1.27	0.60	5.5	6	6	8	11	sw.	Prof. G. H. Colton.		
Hudson.....	Summit.....	1,123	51	33.8	+ 6.3	63	5	9	12	28	2.16	- 0.44	0.73	5.0	6	11	11	9	sw.	Dr. W. I. Chamberlain.		
Lima.....	Allen.....	875	13	32.2	+ 3.8	61	5	6	11	33	2.25	- 0.83	0.95	5.0	7	13	9	9	w.	Miss Ollie DeLong.		
Medina.....	Medina.....	944	24	32.6	+ 3.7	60	5	5	13	32	2.40	- 0.46	0.65	7.0	6	11	5	15	s.	F. W. Clark.		
Montpelier.....	Williams.....	880	20	32.9	+ 4.9	58	6	7	12	31	1.10	- 1.61	0.60	3.0	6	6	1	24	w.	G. L. Laser.		
Napoleon.....	Henry.....	680	25	32.3	+ 2.9	60	5	7	12	26	0.88	- 1.56	0.35	2.0	5	8	3	20	w.	A. C. Senter.		
New Bremen.....	Auglaize.....	1,038	19	32.9	+ 2.6	59	5	5	12	33	1.16	- 1.59	0.35	3.0	8	16	8	7	sw.	Miss Lillian Grothaus.		
North Royalton.....	Cuyahoga.....	1,000	19	32.1	+ 2.9	59	5	8	12	30	1.99	- 0.78	0.54	6.0	6	8	13	10	sw.	W. S. Edgerton.		
Norwalk.....	Huron.....	719	26	34.4	+ 4.1	62	5	9	12	33	2.16	- 0.44	0.80	5.0	8	7	9	15	w.	Giles R. Gregory.		
Oberlin.....	Lorain.....	855	37	34.2	+ 3.7	62	18	9	12	34	1.60	- 0.60	0.65	6.5	7	13	5	13	sw.	Prof. F. F. Jewett.		
Ottawa.....	Putnam.....	720	19	33.6	+ 4.1	61	5	7	12	32	1.33	- 1.13	0.45	1.5	8	4	16	11	sw.	Prof. J. T. Maidlow.		
Sandusky.....	Erie.....	629	35	33.6	+ 2.5	62	5	10	12	30	1.52	- 0.83	0.48	4.3	10	4	7	20	sw.	U. S. Weather Bureau.		
Tiffin.....	Seneca.....	775	30	32.8	+ 1.7	65	5	6	13	33	2.59	- 0.01	0.58	7.0	10	9	8	14	sw.	Prof. T. H. Sonnedecker.		
Toledo.....	Lucas.....	769	41	33.1	+ 2.6	58	5	9	12	29	1.57	- 0.73	0.52	2.8	13	9	15	sw.	U. S. Weather Bureau.			
Upper Sandusky.....	Wyandot.....	854	29	33.0	+ 1.9	60	5	7	12	32	2.58	- 0.07	0.80	6.0	6	11	5	15	sw.	Robert E. Tracht.		
Vickery.....	Sandusky.....	588	19	32.8	+ 2.9	62	5	8	12	29	1.84	- 0.60	0.58	4.3	7	6	8	17	sw.	John W. Barr.		
Wapakoneta.....	Auglaize.....	898	22	32.3	+ 5.8	58	5	6	12	30	1.41	- 0.51	0.60	10	12	9	10	sw.	Dr. William Kayser.			
Wauseon.....	Fulton.....	780	40	31.6	+ 3.9	58	5	7	12	31	1.60	- 1.05	0.53	4.4	15	7	10	14	sw.	Thomas Mikesell.		
Wickliffe.....	Lake.....	740	...	...	...	...	...	...	...	...	1.91	...	0.62	11.0	7	10	7	14	sw.	C. M. Richardson.
Pennsylvania.																						
Erie.....	Erie.....	658	39	34.5	+ 2.8	60	6	14	12	26	2.59	- 0.47	0.71	10.9	13	2	9	20	sw.	U. S. Weather Bureau.		
New York.																						
Adams Center.....	Jefferson.....	540	21	32.2	+ 8.4	60	6	0	9	28	3.82	- 0.15	0.64	29.0	14	15	3	13	s.	A. E. Cooley.		
Angelica.....	Allegany.....	1,340	29	29.2	+ 3.5	57	6	1	9	31	1.94	- 0.72	0.39	9.5	16	1	8	22	w.	Charles P. Arnold.		
Appleton.....	Niagara.....	270	21	34.5	+ 5.2	60	6	14	12	27	1.38	- 1.23	0.39	0.3	8	1	11	19	sw.	H. A. Van Wagoner.		
Auburn.....	Cayuga.....	715	43	33.3	+ 4.3	62	6	12	9	25	2.54	- 0.22	0.64	10.0	8	9	19	3	s.	A. H. Underwood.		
Avon.....	Livingston.....	585	17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	w.	W. G. Markham.
Blue Mountain Lake.....	Hamilton.....	1,750	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	w.	B. F. Merwin.
Brockport.....	Monroe.....	537	16	33.6	+ 6.2	59	6	13	9	25	1.92	- 1.14	0.48	8.5	13	3	8	20	sw.	W. H. Lennon.		
Buffalo.....	Erie.....	767	61	34.4	+ 4.3	59	5	14	12	24	2.21	- 1.16	0.66	5.2	12	3	10	18	sw.	U. S. Weather Bureau.		
Canton.....	St. Lawrence.....	448	18	26.9	+ 4.2	59	6	3	9	33	2.55	- 1.04	0.71	12.7	16	6	8	17	sw.	Do.		
Cape Vincent.....	Jefferson.....	246	7	31.2	-	54	7	6	9	33	1.84	-	0.90	-	6	10	7	14	w.	J. Harry Grapotte.		
Chazy.....	Clinton.....	151	12	29.6	+ 9.7	63	6	0	12	32	0.23	- 1.30	0.13	1.0	2	1	1	1	w.	W. R. North.		
Chestnut Lawn.....	Wyoming.....	1,090	9	32.3	-	61	6	8	9	29	2.03	-	0.71	11.2	12	8	5	18	sw.	Charles Peterson.		
Dannemora.....	Clinton.....	1,490	7	26.2	-	55	6	-	5	9	36	-	1.57	-	0.45	5.9	14	2	9	w.	Dr. W. N. Thayer.	
Elba.....	Genesee.....	500	13	31.6	+ 5.6	59	6	9	9	27	3.80	-	0.62	2.2	17.0	7	12	3	16	sw.	Joseph S. Wilford.	
Fayetteville.....	Onondaga.....	530	11	33.6	+ 8.1	64	6	5	9	29	3.39	-	0.66	2.06	6.5	11	4	10	17	sw.	Dana H. Wells.	
Gabriels.....	Franklin.....	1,729	10	23.3	-	54	6	-	9	9	32	-	2.57	-	0.70	10.6	17	6	7	w.	Gabriels Sanitarium.	
Harkness.....	Clinton.....	622	10	28.7	+ 7.9	62	6	1	9	39	0.19	-	1.39	0.09	3.2	5	23	4	4	w.	J. W. Harkness.	
Hemlock Lake.....	Livingston.....	900	14	33.6	+ 6.2	60	6	12	9	24	1.65	-	0.16	0.60	6.0	9	5	14	w.	Bernard P. McGrady.		
Hunt.....	do.....	1,321	13	33.1	+ 6.4	62	6	10	9	27	1.81	-	0.97	0.65	4.0	7	8	16	nw.	W. S. Barager.		
Ithaca.....	Tompkins.....	928	34	33.4	+ 5.0	65	6	11	13	28	1.48	-	1.16	0.35	8.2	13	5	9	17	se.	U. S. Weather Bureau.	
Keene Valley.....	Essex.....	1,000	14	28.4	+ 8.7	66	6	-	1	9	36	-	0.83	0.65	7.8	10	13	12	6	nw.	E. R. Wells.	
King Ferry.....	Cayuga.....	...	12	1.60	-	0.80	0.37	4.7	9	3	8	20	se.	Lucius A. Goodyear.	
Lake George.....	Warren.....	350	15	31.6	+ 7.4	59	6	2	9	30	3.59	-	0.07	1.35	3.4	6	5	6	20	sw.	Charles Forsell.	
Lake Placid Club.....	Essex.....	1,864	4	21.4	-	51	6	-	10	9	27	4.02	-	0.45	29.9	22	5	15	11	nw.	Henry van Hoevenberg.	
Lauterbrunnен.....	Wyoming.....	0	32.6	61	6	8	9	27	2.06	-	0.74	-	0.74	8.4	13	5	11	15	sw.	James O. Howard.		
Lockport.....	Niagara.....	520	25	33.4	+ 4.8	60	5	14	9	27	1.43	-	1.08	0.40	4.5	8	10	7	14	sw.	Robert N. Clark.	
Lowville.....	Lewis.....	900	45	29.6	+ 7.2	60	6	-	1	9	37	1.67	-	1.50	0.30	19.2	15	6	18	w.	Prof. W. F. H. Breeze.	
Moira.....	Franklin.....	200	12	26.2	+ 7.1	59	6	-	2	9	31	2.57	-	0.56	0.90	18.0	9	7	10	14	sw.	C. E. McBride.
Nehasane.....	Hamilton.....	1,750	4	24.2	-	53	6	-	9	9	42	4.17	-	0.70	35.8	25	7	8	16	sw.	L. W. Brown.	
North Lake.....	Herkimer.....	1,822	11	26.4	-	56	6	-	5	9	41	5.34	-	1.11	25.5	12	7	8	19	w.	John F. Redmond.	
Ogdensburg.....	St. Lawrence.....	175	28	57	-	57	6	-	1	9	39	1.39	-	1.05	0.38	2.4	7	3	19	9	s.	State Hospital.
Old Forge.....	Herkimer.....	1,733	4	26.2	-	54	6	-	6	9	41	4.59	-	0.75	31.6	20	12	3	16	w.	Mrs. S. W. Nelson.	
Oswego.....	Oswego.....	335	42	33.4	+ 4.2	61	6	14	9	26	3.27	-	1.22	0.55	14.2	18	2	9	20	s.	U. S. Weather Bureau.	
Palermo.....	Cattaraugus.....	1,410	8	9	12	...	2.87	-	0.84	0.66	18.1	15	6	9	16	s.	William J. Winke.	
Perry City.....	Chenango.....	460	53	30.3	+ 4.9	61	6	3	13	33	0.89	-	1.87	0.43	2.3	7	4	8	19	s.	E. B. Bartlett.	
Philadelphia.....	Jefferson.....	1,038	32	30.3	+ 4.9	60	6	5	9	30	2.24	-	1.03	0.21	14.5	11	1	1	19	w.	W. H. Jeffers.	

TABLE 2.—*Daily precipitation for December, 1912. District No. 4, Lake region.*

Stations.	Watershed.	Day of month.																																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total						
<i>Minnesota.</i>																																							
Cloquet.....	L. Superior.....	.28				.12	.33	.25																										.01	2.13				
Duluth.....	do.....	.30		T.		.28	.02				T.																							.01	.03	2.19			
Floodwood.....	do.....																																				0.86		
Stephens Mine.....	do.....	.10		.10	T.	.09		T.	.04																										0.74				
Two Harbors.....	do.....	.30				.05	T.	T.																												0.68			
Virginia.....	do.....					.11	T.	.05	.02	.02																													
<i>Wisconsin.</i>																																							
Appleton.....	Fox.....	.29	.20			.13	.02	T.	.03			T.	.01	T.																						0.92			
Ashland.....	I. Superior.....	.20	.06			.15	.21	.08	.01			T.																								T.	1.54		
Bayfield.....	do.....	*	1.10			.22	.11	T.				T.																									2.20		
Cecil.....	Fox.....	.48	.51																																				
Cornucopia.....	L. Superior.....																																						
Crandon.....	Fox.....																																						
Florence.....	Menomonie.....	*	1.34																																				2.57
Fond du Lac.....	Fox.....	.30	.72			.08																																	1.58
Grand River Locks.....	do.....	.16	.50			.10	.08																															1.51	
Green Bay.....	L. Michigan.....	.53	.21			.06	T.	.04																														1.49	
High Falls.....	do.....	.70	.39			.10	.11	.04																														1.89	
Iron River.....	L. Superior.....					T.	.50	.40																														3.15	
Kewaunee.....	L. Michigan.....	*	.86			.12	.02																															1.38	
Manitowoc.....	do.....	.83				.14	T.	T.																														1.68	
Menasha.....	Fox.....	.43				.20																																0.82	
Menomonie Falls.....	L. Michigan.....	.38	.88			.10																																2.13	
Milwaukee.....	do.....	.34	.62																																				1.34
New London.....	Fox.....	.15	.77			.35		T.																														2.10	
Oconto.....	L. Michigan.....	.35	.46			.05		.21																													2.07		
Oshkosh.....	Fox.....	.45				.03	T.																															0.73	
Pine River.....	do.....	.50	.16			.15	.15	T.	T.																												1.86		
Plum Island.....	L. Michigan.....	.28	.61			.03	.33	T.	.16	T.																										1.66			
Plymouth.....	do.....	.33	.82			.06	T.																															1.87	
Port Washington.....		.50	.80			.20																																2.14	
Racine.....	do.....	.12	.40			T.	.12																															1.07	
Ripon.....	Fox.....	.26	.52			.05	.10																														1.41		
Sheboygan.....	L. Michigan.....	.42	.55			.08	T.																															2.98	
Sturgeon Bay.....	do.....	.61	.74			.02		.06	T.																												2.66		
Superior II.....	L. Superior.....	.04	.16			.01	.15		.02																												1.25		
Waupaca.....	Fox.....	.38	.42			.07	.20	T.																													1.83		
<i>Illinois.</i>																																							
Chicago.....	L. Michigan.....	.18	.13	.06		.15				T.																												1.08	
Evanston.....	do.....	.01	.26	T.	.05	.09				T.																											0.89		
Highland Park.....	do.....	.04	.56							T.																												1.09	
<i>Indiana.</i>																																							
Auburn II.....	Maumee.....	T.				.30				T.																												0.78	
Berne.....	do.....	.34				.09				T.																												1.37	
Elkhart.....	St. Joseph.....	.20	.24	T.	.01	.02	.01		T.	T.	T.																										1.07		
Fort Wayne.....	Maumee.....	.38	.45			.25	.64	.04	.32	.12	T.	.10	.16	T.		T.																		0.86					
Hammond.....	L. Michigan.....	.34				.05	T.																														1.25		
Howe II.....	St. Joseph.....	.60	.45			.30																															1.55		
Notre Dame.....	do.....	.29	.04	T.	.03					T.																											1.62		
Whiting.....	L. Michigan.....	.08	.22	.04		.12	.08			T.																										1.05			
<i>Michigan.—Upper Peninsula.</i>																																							
Baraga.....	L. Superior.....	.01				.02	.03	.30	.10		T.	.27	.20	.10																				1.36					
Bergland.....	Ontonagon.....	.27	.36			.29	.35	T.	.20		T.																								2.25				
Calumet.....	L. Superior.....	.38	.45			.25	.64	.04	.32	.12	T.	.10	.16	T.		T.																	4.74						
Chatham.....	do.....	.05	T.			.02	.15	.02																											0.86				
Deer Park.....	do.....	.15	T.																																		1.20		
Detroit.....	St. Marys.....																																						
Eagle Harbor.....	L. Superior.....	.50	T.	T.		.12	.20		.42	.08	T.	.05	.05	T.																									
Escanaba.....	L. Michigan.....	.75	.06			.32	T.	.09	T.	T.	</td																												

TABLE 2.—*Daily precipitation for December, 1912. District No. 4—Continued.*

Stations.	Watershed.	Day of month.																														Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
<i>Michigan.—Lower Peninsula—Con.</i>																																	
Battle Creek.	Kalamazoo.	.42	.	.05	T.	T.	T.	.	.	T.	.	.05	T.	.12	T.	.15	.	.09	T.	.	0.88	
Bay City.	Saginaw.	.60	.70	.	.09	.06	.30	.20	.	T.	.05	.	T.	.	.28	T.	.12	.02	.10	T.	T.	2.67	
Benzonia.	Beissey.	.02	.26	.13	.25	.02	.02	.	.	T.02	.08	T.	.12	.08	.03	1.34	
Berlin.	Clinton.	.06	1.56	.	.06	.	.	.	.	.	.	.	.	.	.15	.14	.	.04	.08	.06	.	.	.	.	.	.	.	.	.	.	2.36
Big Rapids.	Muskegon.	0.63
Blissfield.	Raisin.	1.90
Bloomingdale.	L. Michigan.	T.	.80	.	T.	T.	.	T.	T.	T.	.20	.	.	T.	.	.11	T.	T.	.20	T.	.	.	.	.	.	T.	.60	T.	T.	.	2.26
Cadillac.	Manistee.	.20	1.16	.	.07	.	.	.18	.	T.	.08	1.64	
Cassopolis.	St. Joseph.	0.38
Charlevoix.	L. Michigan.	0.65
Charlotte.	Kalamazoo.	1.59
Cheboygan.	Cheboygan.	T.	.	.10	.	.08	.	.	.30	.	T.	T.	T.	T.	.	.05	T.	T.	.30	T.	.	.	.	.	.	.	.	.	.	.	1.70
Clinton.	Raisin.	.12	.24	.	.02	T.	.	.	.	.	.	.	.	.	.	.	T.	.10	T.	.05	.	.	.	.	.	.	.	.	.	.	0.57
Coldwater.	St. Joseph.	.03	.22	.	.21	.03	.	.	.	T.	.05	.	.	.	.	.14	T.	T.	.10	.	.	.	.	.	.	.	.	.	.	.	1.05
Concord.	Kalamazoo.	1.32
Croton.	Muskegon.	.10	.02	.12	.10	T.	.	T.	.	T.	T.	.	.	.	.	.01	T.	T.	.	.	.	.	.	.	.	.	.	.	.	.	1.26
Detroit.	Detroit.	.06	.31	.01	.04	.08	T.	.	T.	.	T.	T.	.	.	.	.01	.08	.16	.02	.08	.01	.	.	.	.	.	.	.	.	.	1.59
Durand.	Saginaw.	1.26
East Tawas.	L. Huron.	.15	1.65	.	.10	.25	T.	T.	.15	T.	2.35	
Eloise.	Rouge.	.04	.22	.	.09	.01	.20	T.	T.	.	T.	T.	.	.	.	.	.01	T.	.05	.03	T.	T.	.	.	.	.	.	.	.	.	0.84
Flint.	Saginaw.	.25	0.63	
Frankfort.	Betsey.	.11	.	.15	.	.45	.20	.	T.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1.70
Ganges.	L. Michigan.	.03	.30	.	.09	.29	.	T.	.	T.	.08	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1.50
Gaylord.	Cheboygan.	.40	.	.	.	.	.	T.	T.	.06	.20	.	.	.	.	.	T.	.21	.12	T.	.06	.05	T.	.	.	.	.	.	1.84		
Gladwin.	Saginaw.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1.50
Grand Haven.	Grand.	.24	.63	.14	.	.13	T.	.	.05	T.	.04	.05	.	.	.	.	.01	.	.24	.01	T.	.04	.01	T.	.	.	.	.	.	1.75	
Grand Rapids.	Grand.	.do.	.48	.07	.	.27	T.	T.	.	T.	.06	.02	.	.	.	.	T.	.06	T.	.07	.01	.	.	.	.	.	.	.	.	1.32	
Grape.	Raisin.	.03	.50	.	.02	.	.01	T.	.	T.	.01	.	.	.	.	.01	T.	.05	T.	.07	.02	.	.	.	.	.	.	.	.	1.01	
Grass Lake.	Grand.	.30	.	.	.	.	.	.	.	T.	.	T.	.	.	.	.	T.	.11	T.	.15	.	.	.	.	.	.	.	.	.	0.98	
Grayling.	Au Sable.	.19	.76	.	.10	T.	T.	.13	.	.04	.07	.03	.	.	.	.	.07	.	.10	.08	T.	.10	T.	T.	.	.	.	.	.	1.84	
Greenville.	Grand.	.85	.95	.	.10	.10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2.47	
Harbor Beach.	Lake Huron.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2.32
Harrison.	Saginaw.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2.37
Harrisville.	Lake Huron.	.30	.97	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2.37
Hart.	Pentwater.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2.37
Hayes.	Pigeon.	.13	.70	.	.	.	.	.	.	T.	.	.	.	.	.	.	T.	.	T.	.	.	.	.	.	.	.	.	.	.	.	1.38
Highland.	Huron.	.44	.	.12	.24	.11	.	.	.	T.	.	.02	.	.	.	.	T.	.10	T.	.10	T.	.	.	.	.	.	.	.	.	1.54	
Hillsdale.	St. Joseph.	.09	.61	.	.16	.	T.	.	T.	.	.02	.	T.	.	.	.	T.	.17	.02	T.	.12	.03	.	.	.	.	.	.	.	1.52	
Holland.	L. Michigan.	.07	.40	.	.06	.07	.10	.04	.	T.	.	.05	.	T.	.	.	.	T.	.03	.05	T.	.08	.09	.	.	.	.	.	1.46		
Houghton Lake.	Au Sable.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1.46
Howell.	Saginaw.	.17	.	.	.	.	.	.	.	T.	.	.	.	.	.	.	T.	.01	.02	.08	.	.	.	.	.	.	.	.	.	0.78	
Ivan.	Manistee.	T.	.30	.	.08	T.	.	.	.	T.	.	.	.	.	.	T.	.12	T.	.05	T.	.08	T.	.	.	.	.	.	.	.	0.78	
Jackson.	Grand.	.02	.14	.	.02	.15	.	T.	.	T.	.	.	.	.	.	T.	.02	T.	.07	.	.	.	.	.	.	.	.	.	0.64		
Jeddo.	St. Clair.	.35	.	.08	.	.21	.	T.	.	T.	.	T.	.	.	.	T.	.	T.	.08	.05	.02	.	.	.	.	.	.	.	0.85		
Kalamazoo.	Kalamazoo.	T.	.55	.	.15	.20	.10	T.	.	T.	.	T.	.	.	.	.	T.	.28	T.	.30	T.	.	.	.	.	.	.	.	2.03		
Lansing (Agr. Col.).	Grand.	.06	.30	.02	.05	.33	.01	.05	.	T.	.	.01	.	T.	.	.	T.	.04	.01	.12	.	.03	.02	.	.	.	.	.	1.20		
Lansing (Capitol).	Lapeer.	.42	.	.13	.07	.16	.09	.	T.	.	.09	.	T.	.	.	T.	.06	.12	T.	.	.07	.	.	.	.	.	.	1.44			
Lapeer.	Saginaw.	.40	.62	T.	.	T.	T.	.	T.	.	.01	.06	T.	T.	.	.	T.	.01	T.	.24	.01	T.	.11	.01	T.	T.	.	1.54					
Ludington.	L. Michigan.	.18	1.10	.	.07	.06	.	T.	.	T.	.	.08	.01	T.	.	.	T.	.04	.15	T.	.02	.01	T.	.05	.08	T.	.	2.28					
Mackinaw.	Lake Huron.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1.85	
Mancelona.	L. Michigan.	1.00	.80	.	.	.	.	.	T.	T.	.	.	.	.	.	T.	.	T.	.22	T.	.	.15	.	.	.	.	.	.	0.80		
Marshall.	Manistee.	.	.	.	.	.	.	.	.	T.	T.	.	.	.	.	T.	.	T.	.	.	.	.	.	.	.	.	.	.	1.29		
Morenci.	Saginaw.	T.	.10	T.	.	.50	.	.	.	T.	.	.	.	.	.	T.	.02	T.	.	.	.	.	.	.	.	.	.	0.60			
Mount Clemons.	Saginaw.	.05	.	.	.	.	.	.	.	T.	.	.	.	.	.	T.	.	T.	.	.	.	.	.	.	.	.	.	.	0.65		
Mount Pleasant.	Muskegon.	.10	.25	.	.30	.25	.10	.01	.	T.	.	.01	.50	.	.	.	T.	.17	.	.05	.25	.	.	.	.	.	.	3.51			
Muskegon.	Old Mission.	.08	.60	.	.05	.05	.15	.	T.	.	.08	.07	.	.	.	T.	.	T.	.11	.05	.09	.04	T.	.	.	.	.	.	1.51		
Olivet.	Kalamazoo.	T.	.40	T.	.	.04	.16	.06	T.	.	T.	.	.03	T.	.	.	T.	.	.10	T.	.10	.	T.	.	.	.	.	.	0.98		
Omer.	Lake Huron.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0.60	
Onaway.	Cheboygan.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1.21	
Owosso.	Saginaw.	.05	.	.39	.01	.43	.	.	.	T.	.05	.	.	.	.	T.	.	T.	.15	.	.02	.05	.02	.	.	.	.	.	0.87		
Petoskey.	L. Michigan.	.10	.50	T.	.	T.	T.	.	T.	.	.23	T.	.	.	.	T.	.	T.	.20	T.	.	.10	.	.	.	.	.	.	1.39		
Plymouth.	Rouge.	.	.	.	.	.	.	.	.	T.	.	.09	.	.	.	T.	.	T.	.	.	.	.	.	.	.	.	.	0.80			
Pontiac.	Clinton.	T																															

TABLE 2.—*Daily precipitation for December, 1912. District No. 4—Continued.*

Stations.	Watershed.	Day of month.																																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.						
<i>Ohio—Continued.</i>																																							
Hudson.....	Lake Erie.....	.23					.73	T.							T.	.09		.30	.10														.60	2.16					
Lima.....	Maumee.....	.30		.35			T.	.50	T.		T.						.03	T.	.10	.35													.25	2.25					
Medina.....	Lake Erie.....	.29					.08																											.68	2.40				
Montpelier.....	Maumee.....	12	T.	T.	T.	T.																													1.10				
Napoleon.....	do.....	35	T.	T.	T.	T.																													0.88				
New Bremen.....		.12			.33			T.	T.								.04	.05		.20														1.16					
North Royalton.....	Lake Erie.....	.30			.50													.05		.20															1.99				
Northwalk.....	do.....	.30			.18	.24		T.										.02	.07	.30															2.16				
Oberlin.....	do.....	.06			.15			T.																												1.60			
Ottawa.....	Maumee.....	.27			.02	.21		T.									T.	.07	T.	.19															1.33				
Sandusky.....	Lake Erie.....	.01	.17		.43			T.									T.	.02	.11	.10	.40	T.												1.52					
Tiffin.....	Sandusky.....	.52			.58			T.									T.	.06	.18	.02	.02	T.												2.59					
Toledo.....	Maumee.....	13	.40		.01	.14		T.	T.	T.	.01						T.	.10	T.	.38															1.57				
Upper Sandusky.....	Sandusky.....	.45			.60			T.																												2.58			
Vickery.....	Lake Erie.....	.30			.23	.13		T.																												1.84			
Wapakoneta.....	Maumee.....	.19			.29	.01		T.										.01		.20	.05														1.41				
Wauseon.....	do.....	.04	.53		.04	.05		T.	.01	T.	.08							.02		.12	.12	.02	.02											1.60					
Wickliffe |||.....	Lake Erie.....	.18			.35			T.										.24																		1.91			
<i>Pennsylvania.</i>																																							
Erie.....	Lake Erie.....	.26			.27	.02	T.	.10	T.	T.	.38						.04		T.	.23	.19	.13	.05											2.59					
<i>New York.</i>																																							
Adams Center.....	L. Ontario.....	.10	T.		.10	T.	.45	.45	T.	.20	.10	.30	.30					.02	.04	.07	.01	.06	.04	T.											3.82				
Angelica.....	Genesee.....	.34	.02		.34	T.	.07										T.	.08	.02																1.94				
Appleton.....	L. Ontario.....	.20			.14	T.	.02										T.	T.	T.																1.38				
Attica.....	do.....																																						
Auburn.....	Oswego.....	.48			.34																																2.54		
Avon.....	Genesee.....	.24	.02		.26		.07																																
Brockport.....	L. Ontario.....	.24			.12	T.	.13	T.	T.	T.	.08	T.	.30	.04																					2.21				
Buffalo.....	Lake Erie.....	.43	T.	.17	.12	T.	.13	T.	T.	T.	.08	T.	.30	.04																				2.55					
Canton.....	Grass.....	.27		.01	.04	T.	.25	.15																												1.84			
Cape Vincent |||.....	St. L'rence.....	90																																					
Chazy.....	Champlain.....																																						0.23
Chestnut Lawn.....	Genesee.....	.27			.71	T.	T.	T.	T.	T.	.10	.12																							2.03				
Dannemora.....	Champlain.....	.09			.05	.06	T.	T.	.10	T.	.02	.02	.40	.05	T.																		1.57						
Elba.....	L. Ontario.....	1.00																																				1.22	
Fayetteville.....	Oswego.....	.04			.206	T.	.01																														3.80		
Gabriels.....	St. Regis.....	.50			.10	.02		.20	.11	T.	.05	.02	.05																						2.57				
Harkness.....	Champlain.....	.01																																				0.19	
Hemlock Lake.....	Genesee.....	.11			.24			T.	T.	T.																											1.65		
Hunt.....	do.....	.39			.65			T.																														1.81	
Ithaca.....	Oswego.....	.06			.08	.21	.04	T.																												1.48			
Keene Valley.....	Ausable.....	.63						T.	.40	T.																											2.07		
King Ferry.....	Oswego.....	.07																																				1.60	
Lake George.....	Champlain.....	12			.23																																	3.59	
Lake Placid Club.....	A'ble W. B.	.34	.05		.15	.05	.45	.21	.05																										4.02				
Lauterbrunnen.....	Genesee.....	.30			.74	T.		T.																													2.08		
Lockport.....	L. Ontario.....	.20																																				1.43	
Lowville.....	Black.....	.08			.01	.03	.01	.20																												0.67			
Moira.....	St. L'rence.....	.07																																				2.57	
Nehasane.....	Black.....	.54	.30		.15	.07		.07	.07	.17	.03																							4.17					
North Lake.....	do.....	1.11			.33	T.																															5.34		
Ogdensburg.....	St. L'rence.....	.30	T.																																		1.39		
Old Forge.....	Black.....	.70	.20		.30	.07	.08																													4.59			
Oswego.....	L. Ontario.....	.29			T.	.05	.28	.08	.01	T.	T.	.02	.55	.02	T.	.07	.06																2.37						
Palermo.....	Lake Erie.....	.01																																				•	
Perry City.....	Genesee.....	.06																																				0.89	
Philadelphia.....	St. Lawrence.....	.63	.11	T.		.67	.08	.12	T.		.15																								2.24				
Potsdam.....	Raquette.....	.35																																				2.16	
Ranger School.....	Oswegatchie.....																																						
Raquette Lake.....	Raquette.....																																						
Rochester.....	Genesee.....	.20	T.	.11	.13	T.	.08	T.																													1.75		
Romulus.....	Oswego.....	T.	.35		T.																																	1.19	
Scottsville.....	do.....																																						
Shortsville.....	do.....		</																																				

* Precipitation included in that of the next measurement.

Separate dates of falls not recorded.

Precipitation for the 24 hours ending on the morning when it is measured.
Precipitation is less than 0.01 inch rain or melted snow.

T. Precipitation is less than 0.01 inch rain or melted snow.

TABLE 3.—Maximum and minimum temperatures for December, 1912. District No. 4, Lake Region.

Date.	Duluth, Minn.		Wisconsin.				Chicago, Ill.		Fort Wayne, Ind.				Michigan—Upper Peninsula.				Michigan—Lower Peninsula.												
			Florence.		Green Bay.				Escanaba.		Ewen.		Houghton.		Marquette.		Sault Ste. Marie.		Alpena.		Battle Creek.								
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.					
1....	40	17	39	27	49	41	54	40	56	45	58	42	43	39	42	31	43	34	42	37	41	30	48	37	53	35	43	32	
2....	18	6	42	14	48	26	54	27	56	30	54	34	43	18	41	16	34	15	38	17	42	16	51	26	53	31	49	24	
3....	35	18	34	14	37	26	38	26	42	30	43	34	36	20	34	15	36	15	35	17	33	16	34	21	37	30	33	21	
4....	38	18	39	24	42	29	40	31	45	37	48	38	41	29	38	31	37	33	38	34	39	32	41	34	44	37	42	31	
5....	38	10	47	30	52	36	54	37	57	42	60	38	44	37	38	33	40	20	41	33	41	32	51	32	55	34	43	33	
6....	12	0	42	14	50	13	37	19	42	23	59	27	44	15	34	7	20	11	33	12	48	15	52	23	57	27	51	21	
7....	28	1	25	11	36	13	39	18	40	20	36	22	27	15	22	7	26	10	26	14	30	14	33	21	34	23	32	18	
8....	4	-	9	26	2	33	6	38	11	38	13	37	19	21	2	15	-8	14	5	16	6	17	-2	33	9	36	17	34	11
9....	34	4	31	-2	34	6	34	10	34	11	29	12	31	2	35	6	31	6	32	6	34	5	32	12	28	13	29	10	
10....	37	-1	34	17	37	21	37	23	41	29	42	25	37	17	28	10	39	10	39	12	38	13	36	25	35	25	35	27	
11....	0	-8	18	-3	21	2	23	5	29	8	35	11	17	0	15	-3	10	4	12	0	18	4	25	10	36	14	31	9	
12....	11	-10	8	-8	19	-3	20	2	21	3	16	5	13	-4	16	-4	15	4	14	-2	13	-6	16	7	15	11	11	5	
13....	26	8	26	7	34	19	41	20	45	21	40	12	27	13	24	-2	25	11	27	12	22	12	29	16	36	8	29	10	
14....	38	20	36	14	43	23	46	28	47	31	47	26	36	20	44	7	32	16	40	19	33	20	38	25	41	23	39	18	
15....	36	17	37	27	42	33	42	36	43	37	44	35	39	28	36	24	36	24	39	26	37	32	39	33	38	33	38	32	
16....	29	17	33	19	34	25	39	34	40	38	40	35	33	26	26	6	28	15	28	24	32	19	36	28	39	33	37	26	
17....	31	17	28	23	36	32	40	32	44	36	50	35	34	27	27	29	22	30	28	32	25	26	18	31	46	34	37	26	
18....	19	10	27	19	32	20	34	22	36	27	35	29	29	21	29	18	18	28	19	32	20	34	24	36	30	40	32	36	28
19....	22	16	23	18	25	20	34	20	34	25	30	25	24	18	20	12	23	18	25	25	20	30	26	32	25	29	23	23	
20....	22	8	23	12	25	22	31	22	33	25	40	25	25	16	23	10	21	15	24	18	20	8	28	33	32	25	28	21	
Mns..	26.6	9.2	31.1	13.9	34.8	20.0	38.1	23.5	40.4	26.3	40.3	25.7	32.0	18.1	28.7	12.0	28.8	16.4	31.3	18.3	31.1	17.4	35.7	23.9	37.6	25.0	34.6	21.5	

Date.	Lower Michigan.				Ohio.				Erie, Pa.				New York.				Vermont.											
	Detroit.		Muskegon.		Saginaw, West Side.		Cleveland.		Lima.		Sandusky.		Toledo.		BuJalo.		Canton.		Rochester.		Syracuse.		Burlington.					
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.				
1....	53	36	54	34	53	34	53	35	57	37	58	36	56	37	49	32	47	26	30	2	44	28	41	25	35	14	29	6
2....	53	29	53	30	54	25	57	34	57	32	58	34	55	31	57	38	52	39	48	30	53	39	53	39	50	50	50	
3....	38	28	40	27	37	25	40	34	42	34	41	32	42	29	40	35	40	33	34	20	39	40	41	31	46	22		
4....	48	37	45	37	45	35	44	35	60	33	47	36	50	36	46	37	46	38	40	25	45	34	45	35	43	30	46	25
5....	55	37	53	33	56	33	60	40	61	28	62	39	58	37	57	39	39	35	51	29	57	34	51	33	45	31	44	27
6....	58	28	53	29	55	27	60	29	35	25	60	30	58	29	60	34	56	34	59	28	61	34	63	35	59	38	61	39
7....	34	25	40	24	37	22	37	23	37	18	36	27	36	24	34	31	36	30	32	23	34	28	35	31	38	23	39	21
8....	35	13	39	19	38	14	37	20	29	13	37	18	37	15	37	19	33	16	34	13	40	12	35	8	38	9		
9....	28	13	37	19	29	15	29	16	37	25	30	14	30	14	28	19	32	16	30	-3	30	12	30	11	28	5	26	0
10....	41	26	39	33	38	27	42	28	38	19	42	25	42	26	42	27	44	29	42	28	47	26	46	27	40	45	26	
11....	36	14	37	15	31	10	38	18	23	6	37	16	36	16	38	22	41	19	39	16	41	22	42	24	40	20	41	24
12....	17	11	20	11	16	8	18	11	40	11	17	10	18	9	22	14	19	14	19	12	24	14	24	14	22	13	24	13
13....	37	12	58	20	34	16	39	12	46	25	41	13	41	13	34	14	34	15	23	14	31	15	31	15	24	9	23	12
14....	41	27	43	31	45	24	46	29	47	32	46	29	45	27	40	29	39	32	35	30	38	30	33	30	32	20	32	21
15....	41	32	45	36	39	35	46	33	44	32	46	33	44	32	46	35	46	36	42	30	46	47	33	41	32	40	21	
16....	40	32	41	32	37	31	39	37	52	36	40	36	41	34	40	35	39	30	38	16	39	31	38	28	41	19	38	21
17....	50	33	43	33	47	33	50	37	42	27	51	36	51	34	49	35	46	30	33	11	44	27	43	24	33	14	29	13
18....	37	31	38	32	37	31	45	32	33	23	40	29	40	31	47	35	53	37	48	45	20	51	40	48	40	46	33	40
19....	31	25	32	25	31	26	32	26	38	24	30	25	32	25	35	27	37	27	35	28	43	29	47	28	40	32	42	32
20....	33	24	32	25	29	25	36	25	37	16	36	25	38	24	34	27	32	26	31	11	29	26	30	25	34	22	33	23
21....	26	20	29	25	29	18	30	20	28	18	29	20	32	17	32	25	30	26	11	0	28	23</td						